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THOMAS ELECTRONICS INC WAYNE NJ

MANUFACTURING METHODS AND TECHNOLOGY (MM&T) SPECIFICATIONS FOR --ETC(U)

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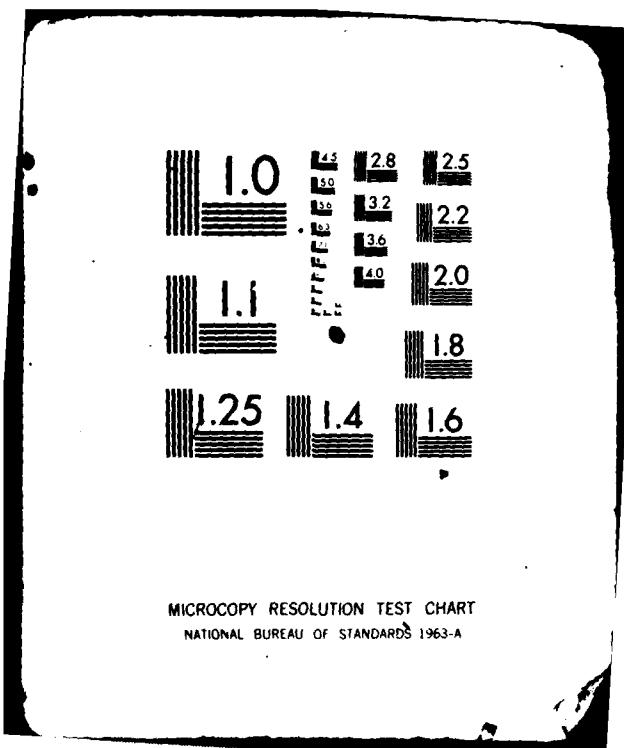
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30 April 1982

Thomas Electronics, Inc.
100 Riverview Drive
Wayne, NJ 07470

SIXTH QUARTERLY REPORT

for period

1 January 1982 - 31 March 1982

Approved for public release; distribution unlimited

Manufacturing Methods and Technology (MM&T) Specifications for Miniature Cathode Ray Tube

prepared by

F. M. Bruno

Thomas Electronics, Inc.
100 Riverview Drive
Wayne, NJ 07470

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prepared for

Procurement and Production Directorate
USA MERADCOM
Fort Belvoir, VA 22060

THOMAS ELECTRONICS, INC.

100 Riverview Drive, Wayne, New Jersey 07470 / 201-696-5200 / TWX: 710-988-5836 / CABLE: TOMTRONICS

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ACKNOWLEDGEMENT

This project has been accomplished as part of the US Army Manufacturing Methods and Technology (MM&T) Program which has as its objective the timely establishment of manufacturing processes, techniques, or equipment to insure the efficient production of current or future defense programs.

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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20. ABSTRACT (contd.)

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Manufacturing Methods and Technology (MM&T) Specifications for
Miniature Cathode Ray Tube

SIXTH QUARTERLY REPORT

for period

1 January 1982 - 31 March 1982

The object of this study is to develop design, performance, and test specifications for the Miniature Cathode Ray Tube (CRT) assembly suitable for use in the Integrated Helmet and Display Sight System (IHADSS) of the Army Advanced Attack Helicopter (AAH).

Contract Number: DAAK70-80-C-0168

Approved by:



M. L. Beasty
Vice President - Engineering

Approved by:



F. M. Bruno
Program Manager

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ABSTRACT/SUMMARY

TEI continued to evaluate materials and components intended for use in fabrication of CRT assemblies for the 3rd Submission of Phase I - Engineering Samples: (1) Life-testing of the P43 phosphor with the fiber optic faceplate and the clear faceplate, and (2) The 1.3" radius fiber optic faceplate and the latest yoke design. A vendor-caused delay was experienced in the planned evaluation of seamless, versus regular-production lap-seam, Mu-metal shields. TEI's newly-constructed in-house equipment became operational to duplicate the EM's conditions for the sine-wave modulation response test. TEI made recommendations to modify testing requirements specified in the contract and the MM&T project, in order to reduce an appreciable delay in the scheduled completion date.

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1.0 PURPOSE

The purpose of this Manufacturing Methods and Technology (MM&T) contract is to establish production methods and facilities required to produce the Miniature Cathode Ray Tube Assembly required for the Integrated Helmet and Display Sight System (IHADSS) of the Army Advanced Attack Helicopter (AAH).

The primary objectives are to develop vendor sources for the required individual components and establish viable production techniques to meet the necessary monthly production rate.

The product produced will be required to meet the mechanical, electrical, performance, and environmental parameters of

MM&T H799838.

2.0 GLOSSARY

AAH.....	Advanced Attack Helicopter
CDRL.....	Contract Data Requirements List
COR.....	Contracting Officer's Representative
CRT.....	Cathode Ray Tube
EM.....	Equipment Manufacturer
IHADSS.....	Integrated Helmet and Display Sight System
MERADCOM.....	Mobility Equipment Research and Development Command
MM&T.....	Manufacturing Methods and Technology
NV&EOL.....	Night Vision & Electro-Optics Laboratory
PERT.....	Program Evaluation and Review Techniques
TEI.....	Thomas Electronics, Inc.
TIR.....	Total Indicated Range

3.0 NARRATIVE AND DATA

3.1 Problem Areas and Solutions.

Two 1" CRT assemblies were made for life-evaluation and testing of the P43 phosphor with the fiber optic faceplate and the clear faceplate. At the close of this report period, life-testing had been run for 1,000 hours and there was no apparent visual phosphor deterioration.

The EM analyzed the 1.3" radius fiber optic faceplate and latest yoke design. Deflection sensitivity had been improved, but barreling of the raster top and bottom was detected (between 1-1/2% and 2%). The previous CRT assembly had met the 1% geometric distortion limit.

After a delay caused by late delivery from the vendor, TEI evaluated the next six yokes (with the 1.3" radius fiber optic faceplate CRTs) for barreling. All units met specifications. However, before ordering the balance of the yokes required for Phase II - Confirmatory Samples and Phase III - Pilot Run Assemblies, TEI fabricated two 1" CRT assemblies using the new yokes so they could be evaluated by the EM; if acceptable, yokes from same lot will be used in the 3rd Submission of Phase I - Engineering Samples.

TEI planned to evaluate the TIR of CRT assemblies with seamless Mu-Metal shields versus regular-production lap-seam Mu-metal shields. However, the sample Mu-metal shields received from

the vendor were not seamless as specified in TEI's purchase order. TEI asked the vendor for clarification. The vendor had misinterpreted TEI's order and stated that seamless shields would be much more costly to fabricate. Nevertheless, the vendor would try to make several seamless samples so that TEI could evaluate seamed versus seamless shields.

Equipment incorporating the EM's video amplifier had been required at TEI for the sine-wave modulation response test. Newly-constructed in-house test equipment became operational for the 3rd Submission of Phase I - Engineering Samples, but a delay of several weeks in the planned delivery of the two CRT assemblies was caused by EM evaluation of the new yokes (mentioned earlier).

TEI also designed two fixtures which will optimize the CRT component concentricity and planned to send these designs out for quote and fabrication.

3.2 Testing Requirements and Contract Completion Date.

The Fifth Quarterly Report discussed how strict adherence to requirements for environmental and reliability testing as stipulated by the contract would consume a greater time period than that allotted by the contract for the entire Phase II (fabrication, too). The COR had advised TEI that its estimated delay in completion of the MM&T program could jeopardize the Army's schedule for the Advanced Attack Helicopter (AAH).

During the Sixth Quarter, the COR gave verbal approval to TEI's proposed recommendations to adjust contract requirements in order to save several months in schedule time: to conduct environmental and reliability testing simultaneously and to reduce the number of samples to be tested from 7 to 5 in Phase II - Confirmatory Samples.

4.0 CONCLUSIONS

TEI continued to evaluate materials and components intended for use in fabrication of CRT assemblies for the 3rd Submission of Phase I - Engineering Samples. After 1,000 hours had been run in life-testing the P43 phosphor with the fiber optic faceplate and with the clear faceplate, there was no apparent visual phosphor deterioration. The new 1.3" radius fiber optic faceplate and the latest yoke design were used in a CRT assembly made for EM evaluation and also as a sample for the 3rd Submission of Phase I - Engineering Samples. Evaluation of seamless versus seamed Mu-metal shields experienced a vendor-caused delay; newly-constructed in-house equipment became operational for the sine-wave modulation response test; and TEI received the COR's approval on its recommendations to modify testing requirements specified in the contract and the MM&T project in order to reduce an appreciable delay in the scheduled completion date.

5.0 PROGRAM FOR NEXT INTERVAL

The program for the next interval is generally similar to that in the Fifth Quarterly Report, as follows:

1. Complete fabrication and test of two CRT assemblies for the 3rd Submission of Phase I - Engineering Samples. Ship sample CRTs with accompanying technical data items to the COR.
2. Commence fabrication and test of ten CRT assemblies for Phase II - Confirmatory Samples.
3. Resolve test requirements and procedures with the COR in order to shorten the completion date (projected by TEI in November 1981) by an estimated four months.
4. Maintain detailed test records for compiling into technical data items required by the contract.
5. Prepare and submit monthly status reports and also the draft and final quarterly reports.

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